SUBMICRON AND NANO SIZE PARTICLE ENCAPSULATION BY ELECTROCHEMICAL PROCESS AND APPARATUS

ABSTRACT OF THE DISCLOSURE

An apparatus and method for coating or treating powdered material, particularly ultra-fine powders in the nanometer or submicron range of mean diameters, by electrolytic processes. A platen is mounted for rotation upon a fixed shaft, and a rotary flow-through electrolytic cell is mounted upon a platen for rotation thereon, the cell's axis of rotation being offset from the platen's axis of rotation. The cells axis of rotation revolves around the platen's axis as the platen rotates. The electrolytic cell accordingly undergoes a planetary rotation, as the cell revolves around the platen's axis of rotation. The planetary rotation of the cell allows the powdered material to be collected by centrifugal force and constantly agitated to promote uniform electroplating. An electrode array and rolling contact system are supplied which allow electric potential to be applied only to those electrodes actually in contact with the powdered material to be treated